

DAVIS WEBER EAST-WEST TRANSPORTATION STUDY LEGISLATIVE REPORT

Prepared for Utah Department of Transportation, Region 1



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This document has been prepared by

InterPlan Co.

7719 South Main Street

Midvale, Utah 84047

(801) 307-3400 (801) 307-3451 Fax

www.interplanco.com

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Chapter 1

Executive Summary

The Davis Weber East-West Transportation Study was a response to the 2007 Utah State Legislature's House Bill 108 (HB 108) request to help communities study future east-west transportation needs. With no signs of a slowing population or opportunities for employment, the north Davis and Weber Counties must plan for a variety of transportation facilities to accommodate the anticipated growth.



Davis and Weber Counties continue to grow.

The Consultant Team prepared, on behalf of the Utah Department of Transportation and Wasatch Front Regional Council (WFRC), a Preferred Transportation Package for improved east-west mobility in north Davis and Weber Counties. Public input was sought to confirm that the transportation network would serve local residents.

Specifically, the study provides two key deliverables broadly described as follows:

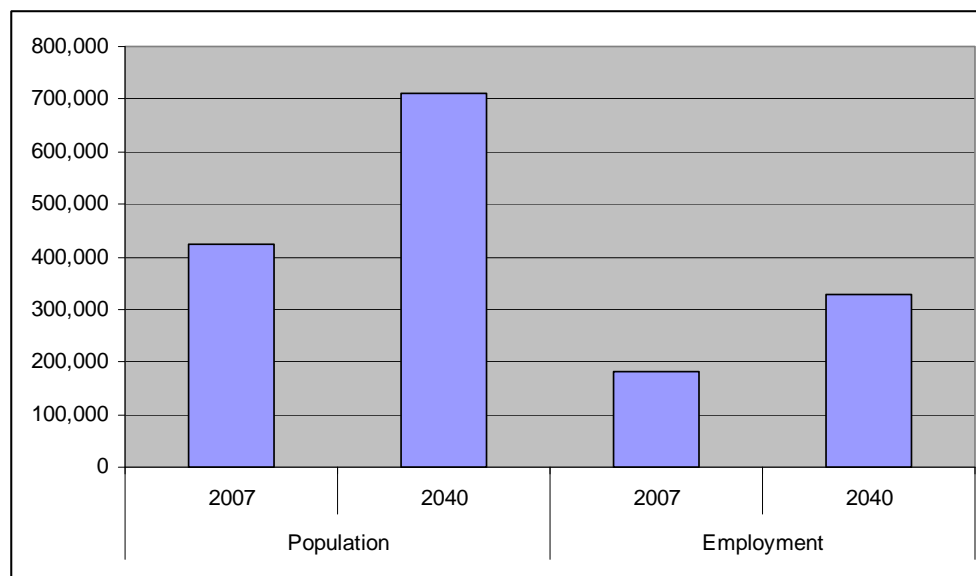
- A five-year priority list of transportation projects in sufficient detail to initiate project programming in the Statewide Transportation Improvement Program (STIP)
- A long term, year 2040, vision of east-west transportation improvements in the Study Area

Over the past year, the Consultant Team analyzed existing and future transportation needs and has worked with jurisdiction representatives to select transportation projects that provide sufficient capacity to address future mobility needs. Among other considerations, the evaluation criteria primarily included:

- the purpose and need of the project
- its environmental impacts
- cost and constructability

Various packages of projects were quantitatively and qualitatively evaluated and then individual projects were evaluated and selected.

Figure 1: Study Area Population and Employment Growth



Representatives from the Wasatch Front Regional Council and the Utah Department of Transportation received nominations at the Davis Weber East-West Transportation Study Kickoff Meeting in September 2007 and formed a Steering Committee which directed the Consultant Team during the study

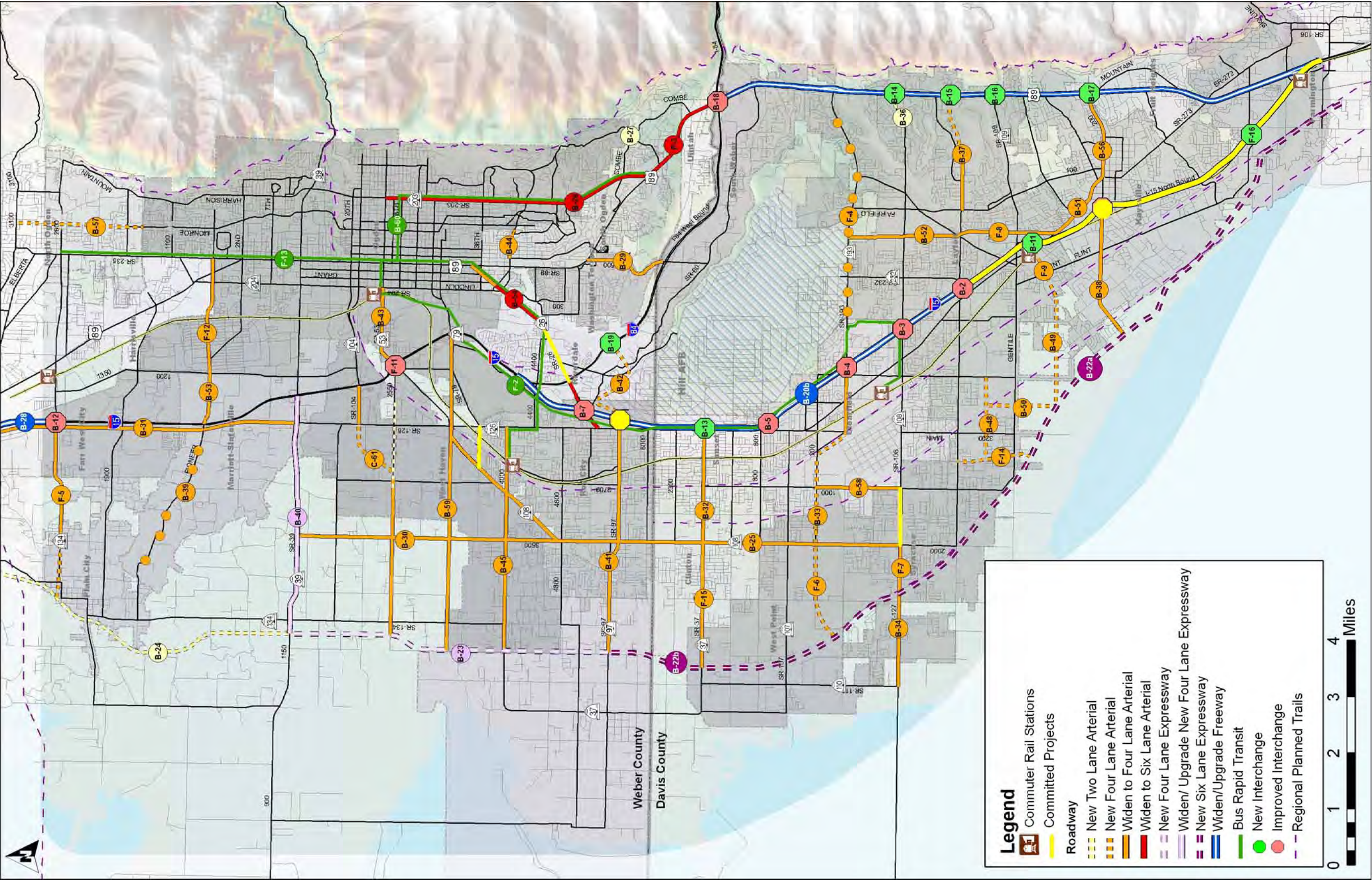
process. The Steering Committee met regularly and represented many interests including private property owners, developers, conservationists, resource agencies, recreational interests and local and state governments. The Steering Committee formed two Working Group Committees to provide more localized expertise and knowledge that proved essential in developing and evaluating criteria and analyzing the results.

After a year of analysis and evaluation, the Davis Weber East-West Transportation Study identified a select number of projects to be completed in phases over the next 30 years that will optimize the Study Area's future transportation network. Most of the roads and transit facilities serve a mix of residential, retail and commercial land uses. The following is a list of the projects identified by segment and priority as well as a map showing the anticipated transportation improvements.

Table 1: Anticipated Transportation Improvements Identified by Segment

Highway							Interchanges							Transit						
Project	Priority	Location	From	To	Description	Lanes	Cost	Project	Priority	Location	Interchange/Intersection	Description	Cost	Project	Priority	Location	From	To	Description	Cost
B22a	1	SR-67 Extension	Farmington	Syracuse Road	New Expressway	Six	807,000,000	B2	1	I-15	Layton - Hill Field Road	Upgrade	38,000,000	B60	1	24th Street/Harrison Blvd	Ogden Commuter Rail Station	SR-89	Bus Rapid Transit	112,000,000
B25	1	SR-108	Syracuse Road	1900 West	Widening	Four	173,000,000	B4	1	I-15	Clearfield - SR-193	Upgrade	20,000,000	F2	2	Bamberger Line	Ogden Commuter Rail Station	Hill/Clearfield	Bus Rapid Transit	427,000,000
B26	1	Harrison Boulevard	SR-89	24th Street	Widening	Six	99,000,000	B5	1	I-15	Clearfield - 650 North	Upgrade	34,000,000	F13	3	North Ogden	Washington	Roy Commuter Rail Station	Bus Rapid Transit	325,000,000
B32	1	1800 North (Sunset)	I-15	2000 West	Widening/New Construction	Four	48,000,000	B6	1	I-15	Roy - 5600 South	Upgrade	34,000,000							
B33	1	200/700 South (Clearfield)	Main Street	2000 West	Widening/New Construction	Four	70,000,000	B7	1	I-15	Riverdale - Riverdale Road	Upgrade	35,000,000							
B36	1	Antelope Drive	2550 E.	SR-89	New Construction	Two	4,000,000	B13	1	I-15	Sunset - 1800 North	New Interchange	155,000,000							
B38	1	200 North (Kaysville)	I-15	SR-67 Extension	Widening	Four	42,000,000	B1	2	I-15	Kaysville - 200 North	Upgrade	40,000,000							
B44	1	40th Street	Adams Ave	Gramercy Ave	Widening	Four	15,000,000	B3	2	I-15	Layton - Antelope Drive	Upgrade	40,000,000							
B51	1	Main Street	I-15	200 North (Kaysville)	Widening	Four	23,000,000	B15	2	SR-89	Layton - Gordon Avenue	New Interchange	198,000,000							
B54	1	Riverdale Road	SR-126	Washington Boulevard	Widening	Four	92,000,000	B16	2	SR-89	Layton - Oak Hills Drive (SR-109)	New Interchange	213,000,000							
F3	1	SR-89	I-84	Harrison Blvd	Widening	Six	52,000,000	B17	2	SR-89	Fruit Heights - 200 North	New Interchange	247,000,000							
F7	1	Syracuse Road	2000 West	SR-67 Extension	Widening	Four	17,000,000	B18	2	SR-89	I-84	Upgrade	319,000,000							
F8	1	Fort Lane	Main Street	Gordon Ave	Widening	Four	24,000,000	F11	2	I-15	24th Street Interchange	Upgrade	160,000,000							
F9	1	700 South (Layton)	I-15	Flint	Widening	Four	13,000,000	B12	3	I-15	Pleasant View - 2700 North	Upgrade	67,000,000							
F14	1	3600 West (Layton)	Gordon Ave	SR-67 Extension	Widening/New Construction	Four	28,000,000	B14	3	SR-89	Layton - Antelope Drive	New Interchange	390,000,000							
B20b	2	I-15	Gordon Ave	I-84	Widening	Six + HOV	213,000,000	B19	3	I-84	5600 South - Riverdale	New Interchange	244,000,000							
B22b	2	SR-67 Extension	Syracuse Road	5600 South	New Expressway	Six	455,000,000	F16	3	I-15	Shepard Lane-Farmington	New Interchange	258,000,000							
B23	2	SR-67 Extension	5600 South	12th Street	New Expressway	Four	293,000,000													
B28	2	I-15	2700 North	Box Elder County	Widening	Six	86,000,000													
B39	2	Pioneer Road	I-15	3500 West	Safety Improvements		8,000,000													
B40	2	12th Street	I-15	SR-67 Extension	Upgrade to Expressway	Four	97,000,000													
B41	2	5500/5600 South	I-15	SR-67 Extension	Widening	Four	94,000,000													
B43	2	24th Street	I-15	Wall Avenue	Widening	Four	119,000,000													
B45	2	4000 South	1900 West	SR-67 Extension	Widening	Four	92,000,000													
B49	2	700/900 South (Layton)	Flint	2700 West	New Construction	Four	66,000,000													
B56	2	200 North (Kaysville)	SR-126	SR-89	Widening	Four	26,000,000													
F4	2	SR-193	I-15	SR-89	Access Management	Four	24,000,000													
F6	2	200 South (West Point)	2000 West	SR-67 Extension	New Construction	Four	40,000,000													
F15	2	1800 North (Sunset)	2000 West	SR-67 Extension	Widening/New Construction	Four	46,000,000													
B24	3	SR-67 Extension	12th Street	S & E Interchange	New Construction	Two	203,000,000													
B29	3	Adams Ave Toll Road	SR-89	I-84	Widening	Four	21,000,000													
B30	3	3500 West	Midland Drive	12th Street	Widening	Four	227,000,000													
B31	3	1900 West	12th Street	S & E Interchange	Widening	Four	292,000,000													
B34	3	Syracuse Road	SR-67 Extension	SR-110	Widening	Four	59,000,000													
B37	3	Gordon Avenue	Fairfield Road	SR-89	Widening/New Construction	Four	80,000,000													
B42	3	5500/5600 South	I-15	I-84	New Construction	Four	122,000,000													
B48	3	Hill Field Road Extension	2200 West	3600 West	New Construction	Four	55,000,000													
B50	3	2700 West (Layton)	Hill Field Road	SR-67 Extension	New Construction	Four	44,000,000													
B52	3	Fort Lane	Gordon Ave	SR 193	Widening	Four	85,000,000													
B53	3	400 North	I-15	1200 West	Widening	Four	26,000,000													
B57	3	Monroe Boulevard	1300 North	3000 North	New Construction	Four	98,000,000													
B58	3	1000 West	200 S	Antelope/SR 108	Widening	Four	55,000,000													
B59	3	3300 S	I-15	SR-67 Extension	Widening	Four	212,000,000													
C61	3	2100 S / 2550 South	I-15	SR-67 Extension	Widening/New Construction	Four	201,000,000													
F5	3	2700 North (SR-134)	I-15	SR-67 Extension	Widening/New Construction	Four	142,000,000													
F12	3	400 North	1200 West	Wall Avenue	Widening/New Construction	Four	122,000,000													
Interchanges																				
Project	Priority	Location	Interchange/Intersection		Description	Cost	Project	Priority	Location	Interchange/Intersection		Description	Cost	Project	Priority	Location	Interchange/Intersection		Description	Cost
B2	1	I-15	Layton - Hill Field Road		Upgrade	38,000,000	B2	1	I-15	Layton - Hill Field Road		Upgrade	38,000,000	B2	1	I-15	Layton - Hill Field Road		Upgrade	38,000,000
B4	1	I-15	Clearfield - SR-193		Upgrade	20,000,000	B4	1	I-15	Clearfield - SR-193		Upgrade	20,000,000	B4	1	I-15	Clearfield - SR-193		Upgrade	20,000,000
B5	1	I-15	Clearfield - 650 North		Upgrade	34,000,000	B5	1	I-15	Clearfield - 650 North		Upgrade	34,000,000	B5	1	I-15	Clearfield - 650 North		Upgrade	34,000,000
B6	1	I-15	Roy - 5600 South		Upgrade	34,000,000	B6	1	I-15	Roy - 5600 South		Upgrade	34,000,000	B6	1	I-15	Roy - 5600 South		Upgrade	34,000,000
B7	1	I-15	Riverdale - Riverdale Road		Upgrade	35,000,000	B7	1	I-15	Riverdale - Riverdale Road		Upgrade	35,000,000	B7	1	I-15	Riverdale - Riverdale Road		Upgrade	35,000,000
B13	1	I-15	Sunset - 1800 North		New Interchange	155,000,000	B13	1	I-15	Sunset - 1800 North		New Interchange	155,000,000	B13	1	I-15	Sunset - 1800 North		New Interchange	155,000,000
B1	2	I-15	Kaysville - 200 North		Upgrade	40,000,000	B1	2	I-15	Kaysville - 200 North		Upgrade	40,000,000	B1	2	I-15	Kaysville - 200 North		Upgrade	40,000,000
B3	2	I-15	Layton - Antelope Drive		Upgrade	40,000,000	B3	2	I-15	Layton - Antelope Drive		Upgrade	40,000,000	B3	2	I-15	Layton - Antelope Drive		Upgrade	40,000,000
B15	2	SR-89	Layton - Gordon Avenue		New Interchange	198,000,000	B15	2	SR-89	Layton - Gordon Avenue		New Interchange	198,000,000	B15	2	SR-89	Layton - Gordon Avenue		New Interchange	198,000,000
B16	2	SR-89	Layton - Oak Hills Drive (SR-109)		New Interchange	213,000,000	B16	2	SR-89	Layton - Oak Hills Drive (SR-109)		New Interchange	213,000,000	B16	2	SR-89	Layton - Oak Hills Drive (SR-109)		New Interchange	213,000,000
B17	2	SR-89	Fruit Heights - 200 North		New Interchange	247,000,000	B17	2	SR-89	Fruit Heights - 200 North		New Interchange	247,000,000	B17	2	SR-89	Fruit Heights - 200 North		New Interchange	247,000,000
B18	2	SR-89	I-84		Upgrade	319,000,000	B18	2	SR-89	I-84		Upgrade	319,000,000	B18	2	SR-89	I-84		Upgrade	319,000,000
F11	2	I-15	24th Street Interchange		Upgrade	160,000,000	F11	2	I-15	24th Street Interchange		Upgrade	160,000,000	F11	2	I-15	24th Street Interchange		Upgrade	160,000,000
B12	3	I-15	Pleasant View - 2700 North		Upgrade	67,000,000	B12	3	I-15	Pleasant View - 2700 North		Upgrade	67,000,000	B12	3	I-15	Pleasant View - 2700 North		Upgrade	67,000,000
B14	3	SR-89	Layton - Antelope Drive		New Interchange	390,000,000	B14	3	SR-89	Layton - Antelope Drive		New Interchange	390,000,000	B14	3	SR-89	Layton - Antelope Drive		New Interchange	390,000,000
B19	3	I-84	5600 South - Riverdale		New Interchange	244,000,000	B19	3	I-84	5600 South - Riverdale		New Interchange	244,000,000	B19	3	I-84	5600 South - Riverdale		New Interchange	244,000,000
F16	3	I-15	Shepard Lane-Farmington		New Interchange	258,000,000	F16	3	I-15	Shepard Lane-Farmington		New Interchange	258,000,000	F16	3	I-15	Shepard Lane-Farmington		New Interchange	258,000,000
Transit																				
Project	Priority	Location	From	To	Description	Cost	Project	Priority	Location	From	To	Description	Cost	Project	Priority	Location	From	To	Description	Cost
B60	1	24th Street/Harrison Blvd	Ogden Commuter Rail Station	SR-89	Bus Rapid Transit	112,000,000	B60	1	24th Street/Harrison Blvd	Ogden Commuter Rail Station	SR-89	Bus Rapid Transit	112,000,000	B60	1	24th Street/Harrison Blvd	Ogden Commuter Rail Station	SR-89	Bus Rapid Transit	112,000,000
F2	2	Bamberger Line	Ogden Commuter Rail Station	Hill/Clearfield	Bus Rapid Transit	427,000,000	F2	2	Bamberger Line	Ogden Commuter Rail Station	Hill/Clearfield	Bus Rapid Transit	427,000,000	F2	2	Bamberger Line	Ogden Commuter Rail Station	Hill/Clearfield	Bus Rapid Transit	427,000,000
F13	3	North Ogden	Washington	Roy Commuter Rail Station	Bus Rapid Transit	325,000,000	F13	3	North Ogden	Washington	Roy Commuter Rail Station	Bus Rapid Transit	325,000,000	F13	3	North Ogden	Washington	Roy Commuter Rail Station	Bus Rapid Transit	325,000,000
Phase	Priority 1	Priority 2	Priority 3	Total																
Cost	\$1,935,000,000	\$3,303,000,000	\$3,328,000,000	\$8,566,000,000																

Figure 2: Anticipated Transportation Improvements



Chapter 2 Introduction

This chapter provides an overview of the Davis Weber East-West Transportation Study including a discussion of the process. The Study Area is introduced along with the Project Management Team.

Study Overview

With the passage of House Bill 108 (HB 108), the 2007 Utah Legislature directed the Utah Department of Transportation (UDOT) to complete a study of east-west transportation improvements in Salt Lake County and counties of the second class that include Utah, Davis, Weber and Washington.

The studies that are being completed in accordance with HB 108 include:

- Salt Lake East-West Transportation Planning Study
- Northern Utah Valley East-West Corridor Study
- Washington County Eastern Hurricane Study and I-15 Study
- Davis Weber East-West Transportation Study (DWEWTS)

The legislative intent of HB 108 was to have UDOT study possible east-west transportation improvements and suggest alternatives to the Legislature for consideration and funding.



Hill Aerospace Museum at Hill Air Force Base. The base is a major employer and an iconic image in the study area.

This study involves long term planning for growth and transportation needs in north Davis and Weber Counties. Additionally, it involves the development of a long-term transportation plan and prioritization of transportation improvement projects necessary to serve the east-west mobility needs of this region.

Davis Weber East-West Transportation Study Process

One goal of the study was to create a public involvement plan that provided meaningful opportunities for the public to be informed and involved in the development of a 30-year transportation vision and a five-year transportation project short list for improved east-west mobility in north Davis and Weber Counties. Specifically, the study has two key deliverables broadly described as follows:

- A five-year priority list of transportation projects in sufficient detail to initiate project programming in the Statewide Transportation Improvement Program (STIP)
- A long term, year 2040, vision of east-west transportation improvements in the Study Area

The project also incorporates a thoughtful and tactical project schedule which coordinates legislative milestones, technical study progress, and community dialogue and input; many jurisdictions, large employers and individuals in the Study Area came together to comment and provide insight.

Project Management Team



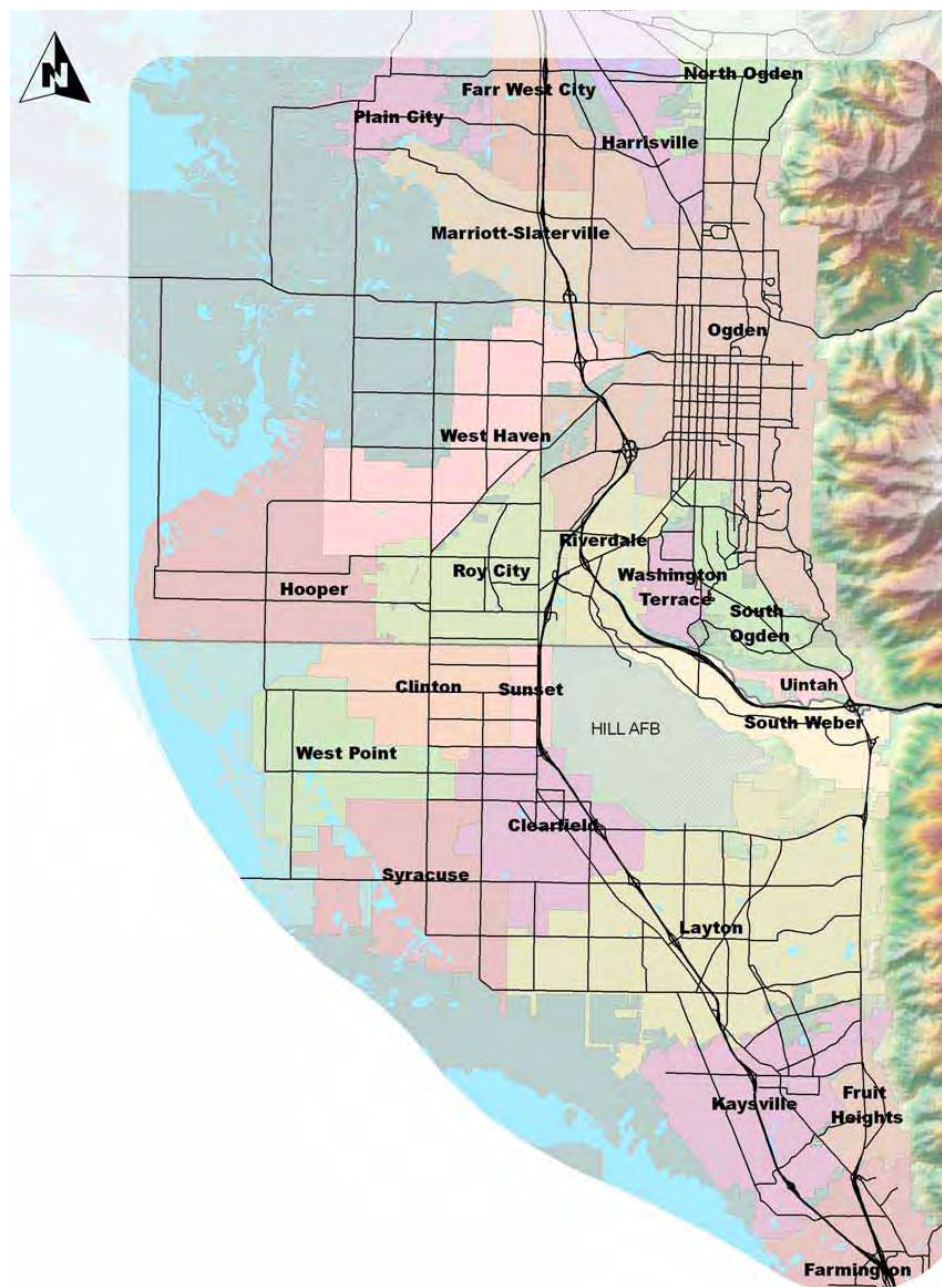
Many entities participated in this study.

The Project Management Team played an important role in the administration of the DWEWTS. Individuals representing the state transportation agency, UDOT; the regional planning organization, WFRC; and the private consulting firms, InterPlan, J-U-B Engineers and The Langdon Group, all worked together to facilitate the completion of this study.

Study Area

The Study Area was divided into work group regions to facilitate discussion of common interests, challenges and issues. The west study area includes jurisdictions and large employers between the SR-67 Extension alignment and I-15 from the US-89 and I-15 merge to approximately Pioneer Road. The east study area includes jurisdictions and large employers between US-89 and I-15 from the US-89 and I-15 merge to approximately 2700 North. Exact planning boundaries were determined by growth trends and expectations derived as part of the study.

Figure 3: Map of Study Area



Chapter 3

Agency and Public Involvement

This chapter provides an overview of the efforts taken to engage residents of the Study Area and others in a public process that resulted in a future transportation network that is an asset.

Introduction

While technical data and complex models drive the formation of a transportation study, an accompanying inclusive public process lends credibility to the technical analysis performed. With this in mind, the Consultant Team followed a carefully designed public involvement process meant to engage stakeholders at all levels in a meaningful way.

The purpose of this engagement was threefold:

- Provide opportunities for input: Certainly a capable technical planning team was able to gather and analyze data and projections, but there is also a human side to a transportation study. Engaging the public who deal with the transportation issues of the Study Area every day – from city planners to the everyday citizen – was critical in completing the scope of analysis.
- Provide feedback and updates on study progress: As information was gathered and processed from all sources, it was critical to close the loop with the public. As such, the study team provided ample opportunity for members of the public to learn about study progress and stay informed on findings and proposed plans.



(photo credit: RYAN MCGEENEY/Standard-Examiner)
The public participated in four open houses during the study.

- Provide study credibility: Without a transparent and inclusive process, any public endeavor is susceptible to criticism if decisions are made without regard to the public good. This in mind, the Consultant Team executed and documented an open and thorough process, where any interested party could have a say in proposed outcomes.

Representatives from UDOT, InterPlan, J-U-B Engineers, and The Langdon Group were heavily involved in all outreach efforts. The group was responsible for gathering the necessary technical and analytical data and coordinating with the various stakeholders in the region in order to produce the transportation plans requested by the Legislature. The Langdon Group worked closely with this team in all public involvement efforts and relied on this team for the substance of public interactions.

In short, UDOT and the Consultant Team were interested in making this a comprehensive study, founded on technical data as well as public input. Combining those two data streams has produced a well-rounded study, with proposed vision and action plans that are technically sound and publicly vetted.

Methods and Process

The Consultant Team used the methods below to engage study stakeholders. The overarching philosophy of the public process was to approach stakeholders at three levels: policy, program and public. At the policy level, agency and organizational decision-makers were engaged by committee. At the program level, city staff and other managers were involved either by committee or direct consultation. At the public level, various mechanisms combined to both receive input and provide information to the public. This approach facilitated the collection and understanding of a wide cross-section of interests and issues.

Kickoff and Agency Partnering Meeting

The Consultant Team held an Agency Partnering meeting on October 25, 2007 at Weber State University. The meeting was attended by officials from the Study Area cities, WFRC, UDOT, and other interest groups and organizations.

The purpose of the meeting was to discuss the various interests that defined the study and to clarify roles and responsibilities of each entity involved.

Participants were invited to join brief roundtable discussions with others about the interests at stake that concerned them. Interest areas included:

- | | |
|--------------------------------------|------------------------------------|
| ▪ Economic development | ▪ Funding |
| ▪ Environment and quality growth | ▪ Mobility and multi-modal options |
| ▪ East-west vs. north-south mobility | ▪ Safety |

After participating in two or three roundtable discussions on different topics, participants were asked to nominate one or two representatives of each interest category to sit on the study's Steering Committee.

Steering Committee

The Steering Committee represents 22 agency and special-interest group representatives to guide the study process at a quasi-policy level.

Table 2: Steering Committee Membership

Steering Committee			
Topic	Name	Affiliation	Position
Economic Development	Chris Hillman	Clearfield City	City Manager
Economic Development	Wilf Sommerkorn	Davis Council of Governments	Community & Economic Development Director
Economic Development	Darrin Wray	Hill Air Force Base	West Side Development Project Manager
Economic Development	Sue Zampedri	Ogden City	Council Staff
Environment & Quality Growth	Nicol Gagstetter	The Nature Conservancy	Government Relations Specialist
Environment & Quality Growth	Helene Liebman	Weber Pathways	Executive Director
Environment & Quality Growth	Becky Messerly	Western Weber County Planning	Planning Commissioner
Environment & Quality Growth	Bret Millburn	Davis County Commission	County Commissioner
East-West vs. North-South	Boyd Davis	West Point City	City Engineer
East-West vs. North-South	Nathan Lee	UDOT	Region Program Manager
East-West vs. North-South	Kent Nomura	Hill Air Force Base	75 CES/CEES
East-West vs. North-South	Jan Zogmaister	Weber County	Commissioner
Funding	Craig Dearden	Weber County	Commissioner
Funding	Max Forbush	Farmington City	City Manager
Mobility & Multi-Modal	Kevin Hansen	Weber State University	Facilities Management
Mobility & Multi-Modal	Kent Jorgenson	Utah Transit Authority (UTA)	Regional Marketing Specialist
Mobility & Multi-Modal	Sue Morgan	Weber School District	Routing Specialist
Mobility & Multi-Modal	Bruce Talbot	Pleasant View City	Director of Community & Development Services
Safety	Curtis Christensen	Weber County	Weber County Engineer
Safety	Louenda Downs	Davis County Commission	Commissioner
Safety	Steve Handy	Layton City	City Council member

The group was based primarily on interests rather than geography, but the makeup of the group was representative of the demographics in the region. The Consultant Team members asked attendees of the DWEWTS Kickoff meeting to nominate individuals based upon one of the six areas of interest identified. After a review of the nominations the Consultant Team, in collaboration with representatives from UDOT and the WFRC, selected the Steering Committee members.

One function of the Steering Committee was to bridge the geographic separation of the Working Groups. The Steering Committee met in December 2007 and in April and July of 2008.

Working Groups

For this study, there were two Working Groups – one east of I-15 and one west of I-15 – of 12 to 15 representatives each.

These two groups were geographically based and were primarily made up of city representatives. The Consultant Team intentionally combined representatives from Davis and Weber Counties to get a cross-section of interests while also setting a local focus.

These groups provided an on-the-ground perspective to project plans as they developed, meeting in January, March and May of 2008. Working Group members were also invited to attend the final Steering Committee meeting in July.

Table 3: East and West Working Group Membership

East Working Group		
County/City	Name	Title
Davis County	Scott Hess	Community Development Planner
Weber County	Curtis Christensen	County Engineer
Farmington City	Dave Petersen	Community Development Director
Farr West City	Bill Malone	Planning Commissioner
Harrisville City	Gene Bingham	Public Works Director
Kaysville City	Andy Thompson	City Engineer
Layton City	Peter Matson	Long Range Planner
Marriott-Slaterville City	Bill Morris	City Administrator and General Counsel
North Ogden City	Craig Barker	Community Development Director
Ogden City	Greg Montgomery	Planning Manager
Pleasant View City	Bruce Talbot	Director of Community and Development Services
Riverdale City	Shawn Douglas	Deputy Public Works Director
South Ogden City	Scott Darrington	City Administrator
South Weber City	Barry Burton	Assistant Director Davis County Department of Community and Economic Development; Planner for South Weber City
Uintah City	Craig Kendell	Mayor
Hill Air Force Base	Kent Nomura	75 CES/CEES
Hill Air Force Base	Darrin Wray	West Side Development Project Manager

West Working Group		
City/County	Name	Title
Weber County	Curtis Christensen	County Engineer
Davis County	Scott Hess	Community Development Planner
Clearfield City	Gregg Benson	City Planner
Clearfield City	Kent Bush	Planning and Zoning Administrator
Clinton City	Lynn Vinzant	Assistant City Manager/Community Development Director
Farr West City	Mike Lunt	City Council Member
Farr West City	Bill Malone	Planning and Zoning
Hooper City	Glenn Barrow	Mayor
Kaysville City	Andy Thompson	City Engineer
Layton City	Peter Matson	Long Range Planner
Marriott-Slaterville City	Bill Morris	City Administrator & General Counsel
Plain City	Brett Ferrin	City Council Member
Roy City	Mark Larson	City Planner
Sunset City	Mickey Hennesse	Public Works Director
Syracuse City	Rodger Worthen	City Administrator
West Haven City	Steven Anderson	Engineer/Planner
West Point City	Boyd Davis	City Engineer
Hill Air Force Base	Kent Nomura	75CES/CEES

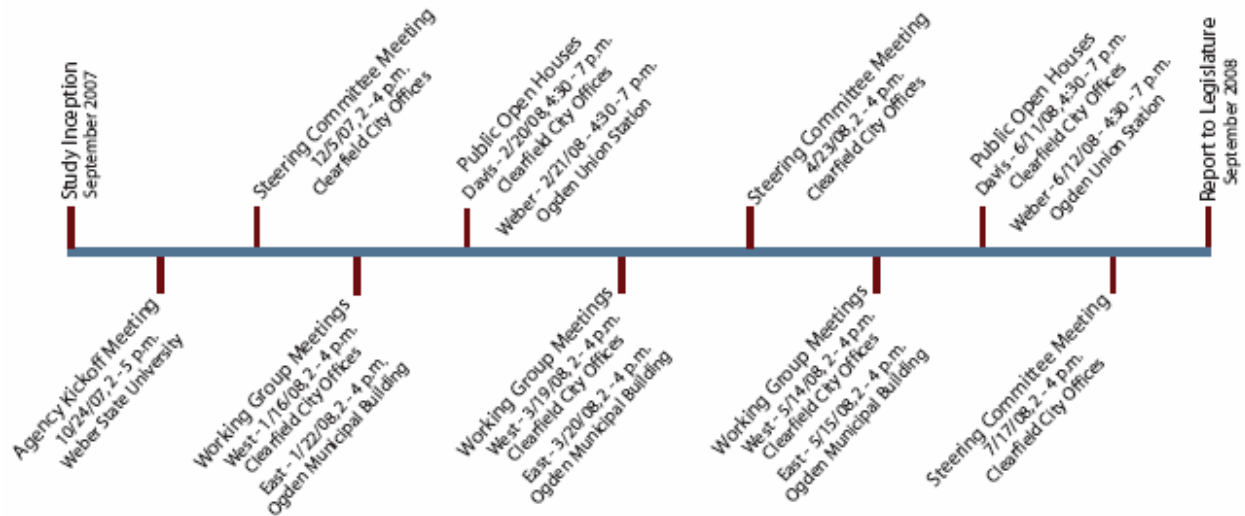
Open Houses

The study team held a total of four open houses throughout the study process: two identical meetings were held in February 2008 and two in June 2008. These meetings were open to the public and were hosted in Clearfield and Ogden.

The February open houses were focused on soliciting public input on the vision of the study. At this stage, public input was factored heavily into study decisions moving forward.

The June open houses were designed to inform stakeholders of draft study outcomes and again to solicit feedback. At these meetings, the draft Preferred Transportation Package was presented as well as the draft prioritization.

Figure 4: Study Time Line



Study Team Availability

A key component of any study or project process is the constant availability of the Study Team to the public to answer questions, provide updates/information and resolve concerns. This availability was provided via a project-dedicated phone line and E-mail address. All interactions with the public were tracked in a comprehensive study database from which reports and updates were generated for use by the Consultant Team and other study groups.

Study Website

Given the expansive geography of the study area, a vital piece of the outreach effort was a study website, www.udot.utah.gov/daviswebereastwest.

Note: Agendas and materials from the above meetings and methods are included in the Appendix.

Chapter 4

Study Area Growth Forecasts

This chapter forecasts the 2040 population, employment, and dwelling unit characteristics of the Study Area and begins to describe the backdrop and vision for the Study Area future.

Data Collection to Ensure Accurate Population Forecasting

The Study Area is growing rapidly. This growth brings changes and challenges to the transportation system in Davis and Weber Counties that this study addressed.

In order to plan for a transportation network that will accommodate future population growth, a careful examination of projected socio-economic conditions occurred. This section provides a summary of existing population, employment, and dwelling units in the Study Area to assist in transportation planning for the year 2040.

Consultant team members from InterPlan met with representatives from jurisdictions within the Study Area to determine if existing and expected growth were adequately reflected in the WFRC forecasts and related travel demand model.

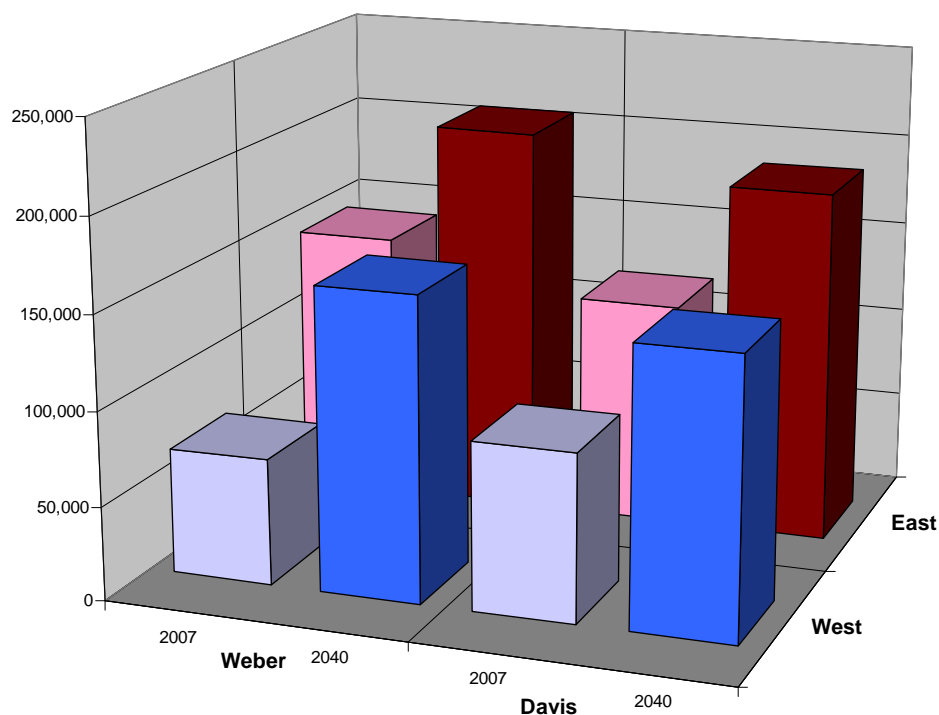


Congestion often increases as growth occurs.

Population

As with the non-study areas of Davis and Weber Counties and the state as a whole, population projections for the Study Area show steady growth in the coming decades. The existing and future population is shown for the east and west portions of the Study Area in Figure 5. It should be emphasized that jurisdiction level projections included in this analysis are based on an aggregate of traffic analysis zones (TAZs), as used in the travel demand model, and do not necessarily match exact city or county boundaries.

Figure 5: Population Growth 2007 and 2040, by east and west portions of the Study Area



Source: Wasatch Front Regional Council Traffic Analysis Zone data

Davis County's growth rate levels off in the year 2020, most likely due to build out of available land. Between the 1990 and 2000 US Census, Davis County grew by 27 percent or by 51,053 individuals. Weber County grew at a slightly slower pace during the same period of time: 24 percent or 38,203 individuals. Between the April 1, 2000 US Census and Utah's Population Estimates by County for 2006, Davis County has already experienced a 19 percent increase in their population and Weber County a nine percent increase. The population increases dramatically in the western portion of the northwest quadrant of Davis County. Western Weber County experiences strong growth as well. The population expands from Ogden and moves south and west. The impact of this growth on the transportation network will be significant.

A strong example of growth in the Study Area is the city of West Haven. The aerial photographs below provide a comparison of growth between 1993 and 2006. In 1993,

West Haven was a very small community yet to experience growth. By 2006, West Haven had grown remarkably through residential and commercial development. West Haven is only one example of the rapid growth that will be experienced in the Study Area in the coming years.

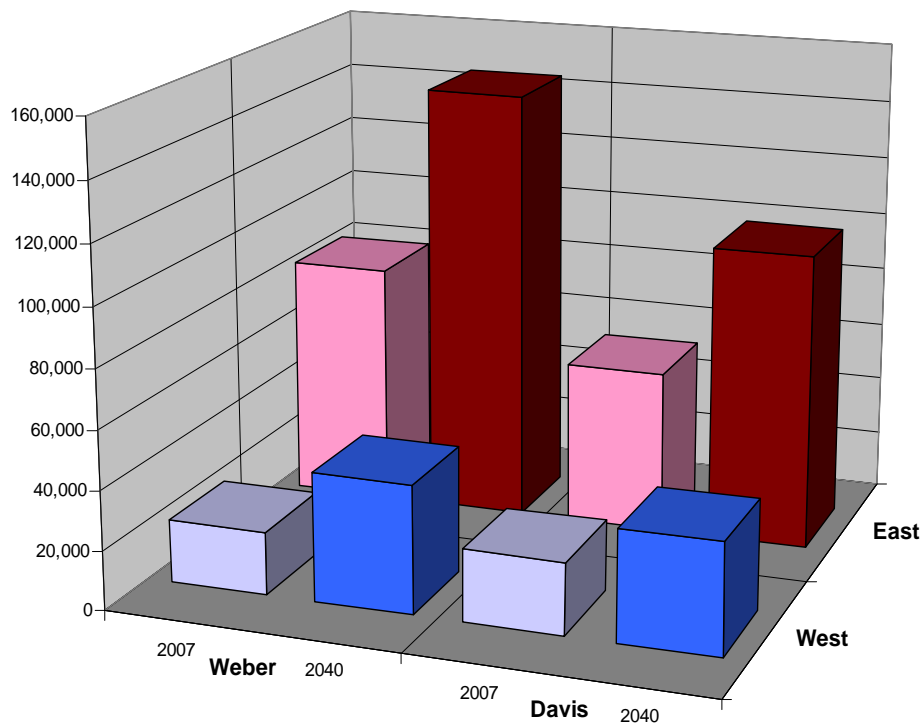
Figure 6: Photos of growth in West Haven between 1993 and 2006



Employment

Population and Employment are closely linked socio-economic factors.

Figure 7: Employment Growth 2007 and 2040, by east and west portions of the Study Area

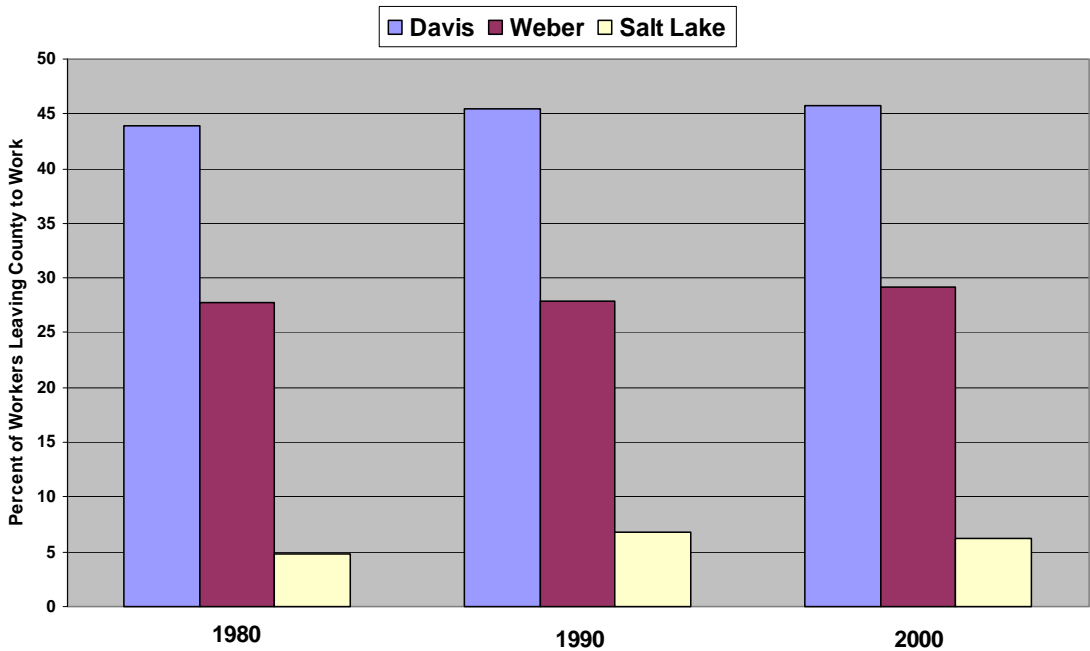


Source: Wasatch Front Regional Council Traffic Analysis Zone data

A review of Figure 7 shows that both north Davis and Weber Counties experience job growth from 2007 through planning year 2040. Weber County experiences a stronger job growth than Davis County over the same period of time. This rapid increase in Weber County could be due to several large employment centers that might expand in the future. In Davis County, some growth will result from a 550 acre Falcon Hill National Aerospace Research Park located on the west side of Hill Air Force Base adjacent to I-15. Hill Air Force Base analysts believe that over 15,000 jobs will result from this development. What is noteworthy is the significant job growth that occurs on the east side of I-15. Currently, there is a pattern of more population than jobs on the west side of I-15 and this pattern continues to planning year 2040.

The growth of both population and employment in the Study Area will have significant impact on both the local and regional transportation networks. The historical commuting patterns of the residents in Davis and Weber Counties show that nearly 50 percent of Davis residents and over 25 percent of Weber residents travel to work outside of their county of residence (see Figure 8). Salt Lake County residents, on the other hand, do not generally leave Salt Lake County for employment.

Figure 8: Historical resident workers leaving Davis or Weber Counties to work in another county

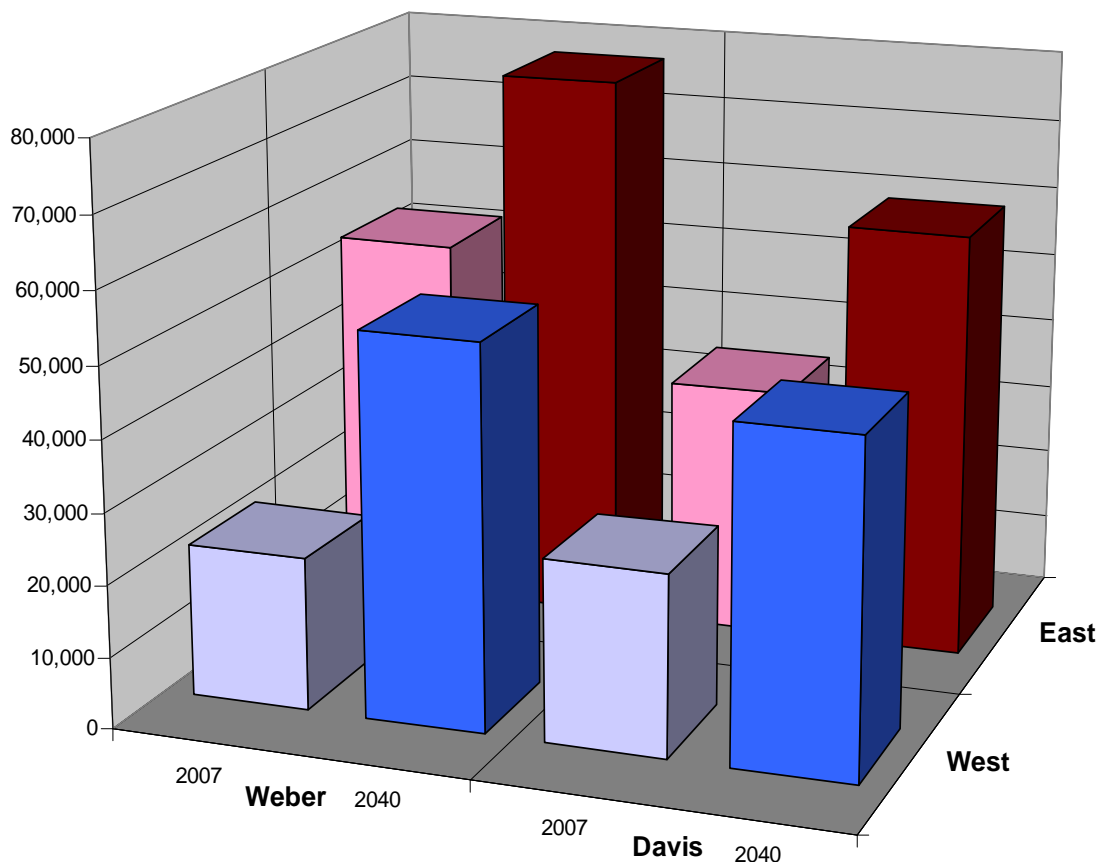


Source: US Census

Dwelling Units

Based upon the discussions with individual jurisdictions conducted by InterPlan staff members, some dwelling unit numbers were adjusted by TAZ within the travel demand model.

Figure 9: Dwelling Unit Growth 2007 and 2040, by east and west portions of the Study Area



Source: Davis and Weber County city jurisdictions

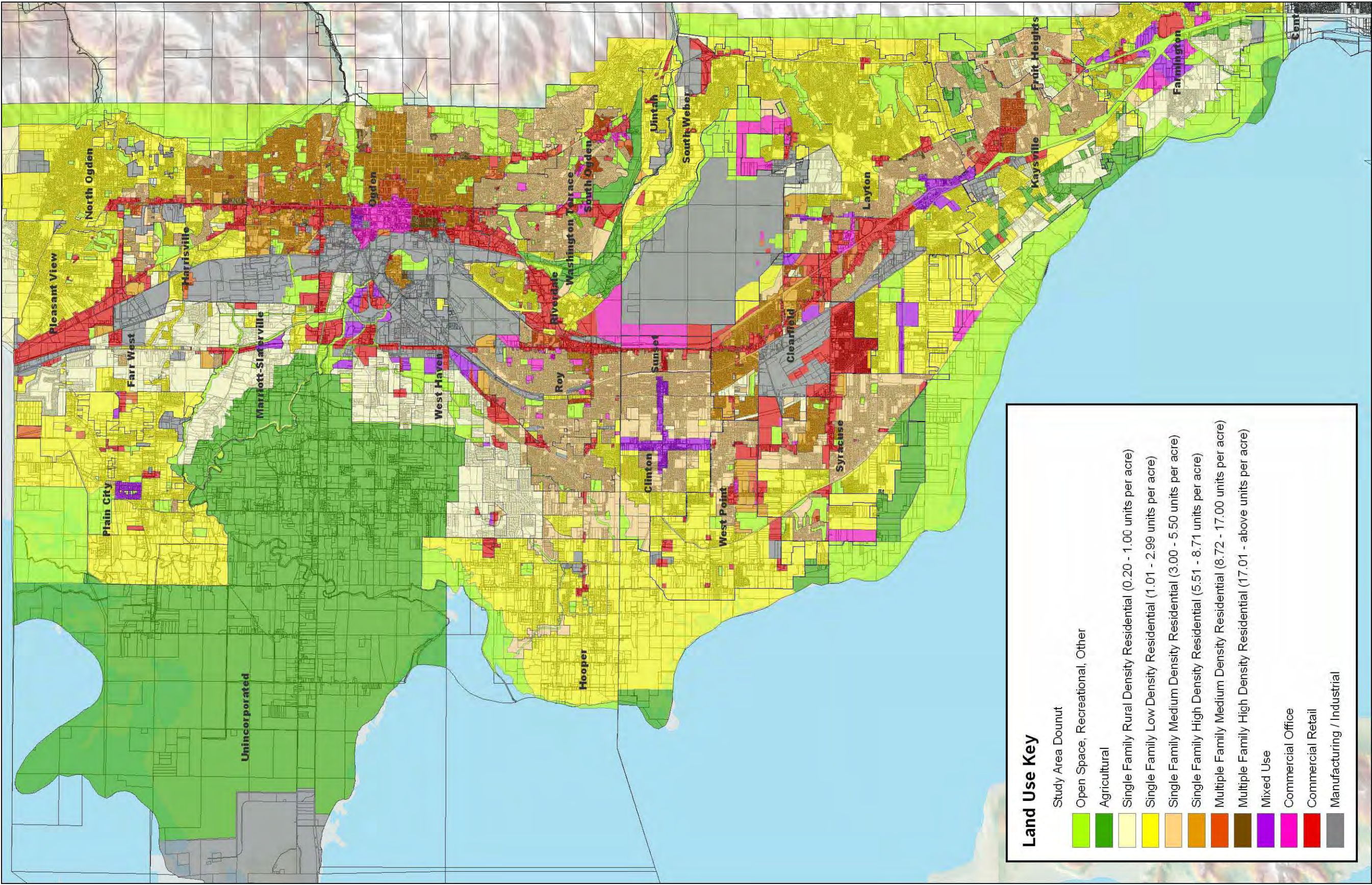
The growth in dwelling units in the Weber and Davis areas increases markedly between 2007 and 2040, especially on the west side of the Study Area. Figure 9 shows the growth in dwelling units for the complete Study Area divided geographically by the east and west side. It is clear that there is strong growth in the number of dwelling units through planning year 2040. This will have an impact on the planning of a transportation network.

Land Use

The historical land use development has been from east to west and south to north. Future development patterns within the Study Area are not expected to change dramatically in coming years. Employment numbers indicate that while most cities do anticipate adding commercial land uses in coming decades, and thereby increasing employment opportunities; however, there will continue to be more residents than jobs. As with existing land uses, residential development will continue to be primarily single-family and suburban in nature causing most workers that live in the area to seek employment elsewhere.

Figure 10 shows the residential versus agricultural, commercial and industrial land uses in the Study Area. It is apparent that while there are areas of employment and commercial activity in the Study Area, the majority of development is low density residential land use. However, the land use may change in the future. Ogden plans high density development for its downtown core. Additionally, a mixed use development pattern is becoming a popular option for new development in the Study Area. For example, a large mixed used development is planned that will require cooperation and collaboration between the cities of Syracuse, Clearfield and West Point.

Figure 10: 2007 Land Use in the Study Area

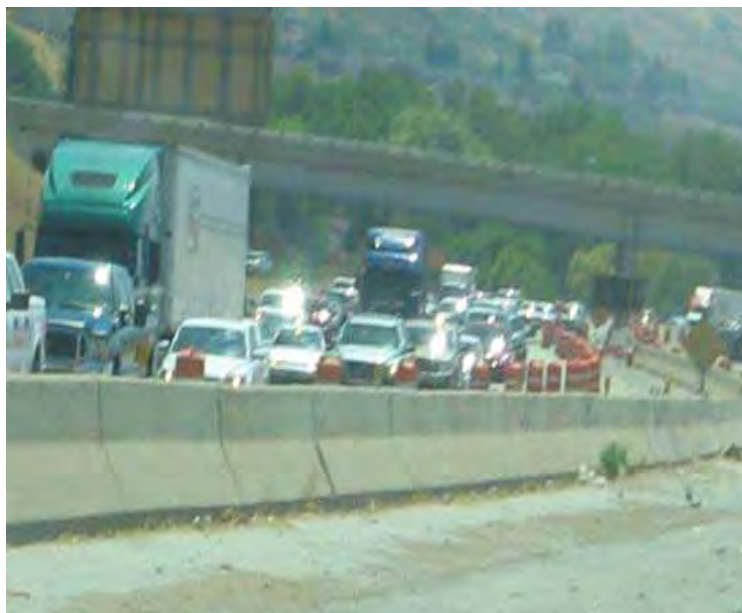


Chapter 5 Existing Studies

The Davis Weber East-West Transportation Study is not the first time transportation issues have been addressed in the Study Area. It is important that this study builds on past analyses. This chapter introduces the existing highway and transit studies recently completed, or currently being completed in the Study Area.

Regional Planning

As stated earlier, the WFRC is responsible for the regional level transportation planning in the urbanized areas of Salt Lake, Davis and Weber Counties. Once every four years, the WFRC, in collaboration with UDOT and the Utah Transit Authority (UTA), along with other interested stakeholders, is mandated by the federal government to produce or update a regional transportation plan. The Wasatch Front Regional Transportation Plan 2007-2030, or more commonly known as the Wasatch Front 2030 RTP, was last adopted on May 24, 2007. Highway and transit projects anticipated in the next 23 years in Davis and Weber Counties are included in the WFRC's 2030 RTP.



The growth in the region impacts transportation at a regional level.

Transportation Studies

In the past, many of the regional transportation studies have focused more on north-south transportation issues. Recent north-south studies, identified in the Study Area, being reviewed as part of this study include the following:

- US-89 I-15/Farmington to Harrison Boulevard/South Ogden Davis and Weber Counties, Utah. Final Environmental Impact Statement (1996)
- North Legacy Transportation Corridor Study (2001)
- Inter-Regional Corridor Alternatives Analysis (2002)
- Weber County to Salt Lake Commuter Rail. Environmental Impact Statement (2005)
- I-15 Corridor Plan – Kaysville to Ogden (2005)
- SR-108 Environmental Impact Statement (in process)
- North Legacy Supplemental Corridor Study (in process)
- South Davis Transit Study (in process)

By comparison, recent east-west studies include:

- 200/700 South Corridor Preservation Study (2000)
- SR-79; Hinckley Drive Extension to SR-108, Ogden. Environmental Assessment (2002)
- Syracuse Road 1000 West to 2000 West. Environmental Impact Statement (2007)
- Layton Interchange. Environmental Impact Statement (in process)
- North Legacy Connector (in process)

Other studies, past and in process, that examine both east-west and north-south transportation corridors:

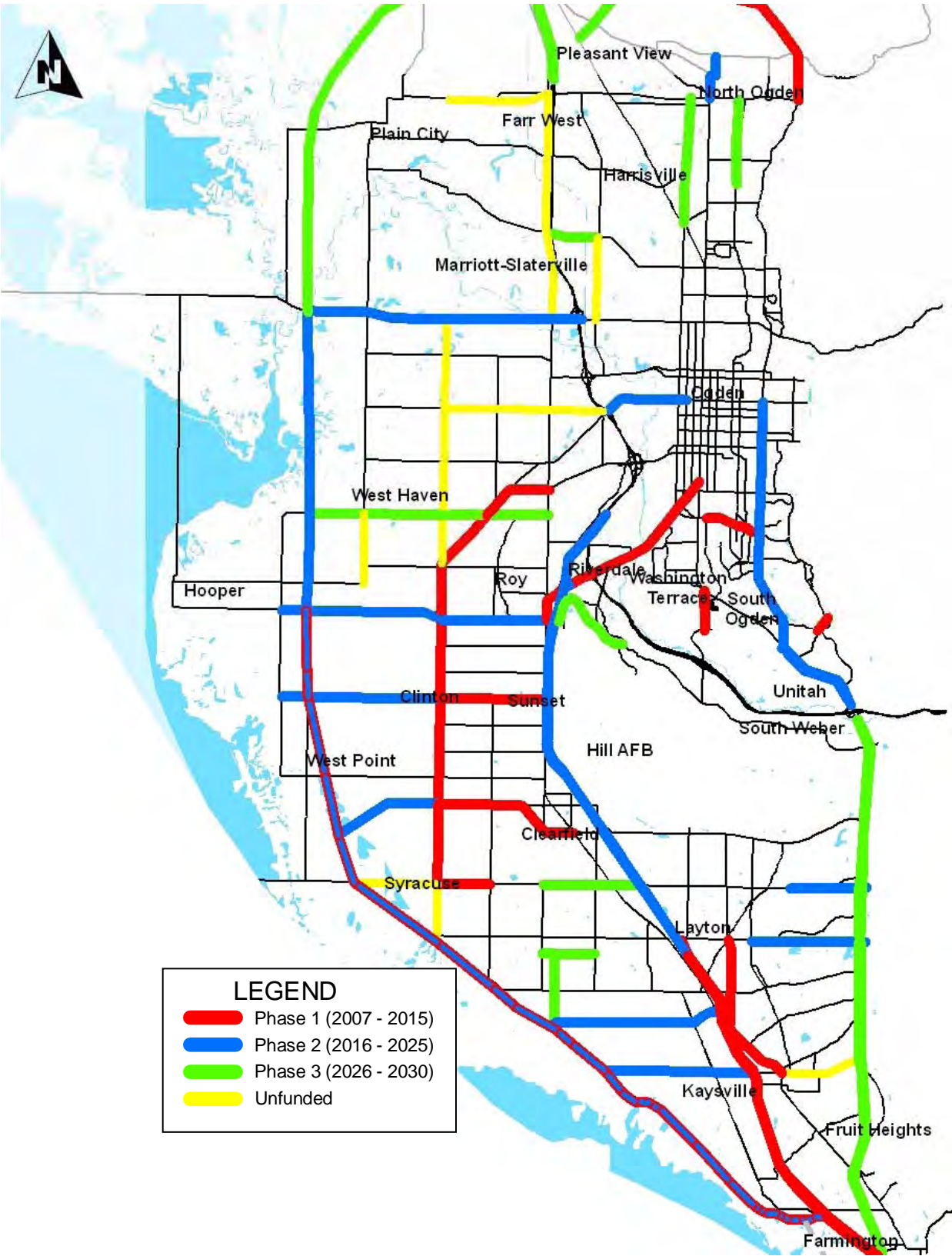
- West Central Weber County General Plan (2003)
- Ogden/Weber State Transit Corridor Study (2005)
- North Weber County Corridor Preservation Study (2005)
- Weber State University Master Transportation Plan (2006)
- West Point City Transportation Master Plan (2007)
- SR-26 Riverdale Road from 1900 West to Washington Boulevard. Environmental Impact Statement (2007)

The Consultant Team reviewed all existing studies, both north-south and east-west, as part of the study process so as to provide an all encompassing approach to east-west transportation issues.

Wasatch Front 2030 RTP

The Wasatch Front 2030 RTP is a starting point from which the Davis Weber East-West Transportation Study proceeds. Through specialized study and analysis, the Consultant Team examined the capacity of the east-west roads in the Study Area as well as reviewed other existing studies to estimate the timing of proposed transportation improvement projects. The following map represents the Wasatch Front 2030 RTP Highway Projects in the Study Area.

Figure 11: Wasatch Front 2030 RTP Highway Projects by Phase



Chapter 6

Initial Needs Assessment and Future Deficiencies

Overall, solid steady growth in the Study Area will create challenges for the existing transportation network. Not only will there need to be changes in the way individuals travel, but transportation facilities will need to be constructed as well as expanded in order to accommodate the burgeoning population. The above analysis on the socio-economic data in the Study Area provides a base upon which to evaluate proposed transportation networks that accommodate the requirements of 2007 HB 108.

Travel Patterns

The activities that motivate an individual to travel from one place to another are at the base of understanding travel patterns. For example, traveling to work or to the grocery store creates individual movements that collectively become travel patterns when the many individual movements are grouped together. This section provides analysis on the travel patterns that are made by all trips as well as work trips made by individuals in the Study Area. For analysis purposes, the Study Area has been divided into eight travel districts or areas: Northwest, Northeast and Southwest Weber County, Ogden, Northwest, West and East Davis



The transportation system must meet various types of needs.

County and Hill Air Force Base. Figure 12 shows the percent of work trips and total trips to the Salt Lake area from the Study Area in 2007.

Figure 12: 2007 Percentage of Trips taken to the Salt Lake Area

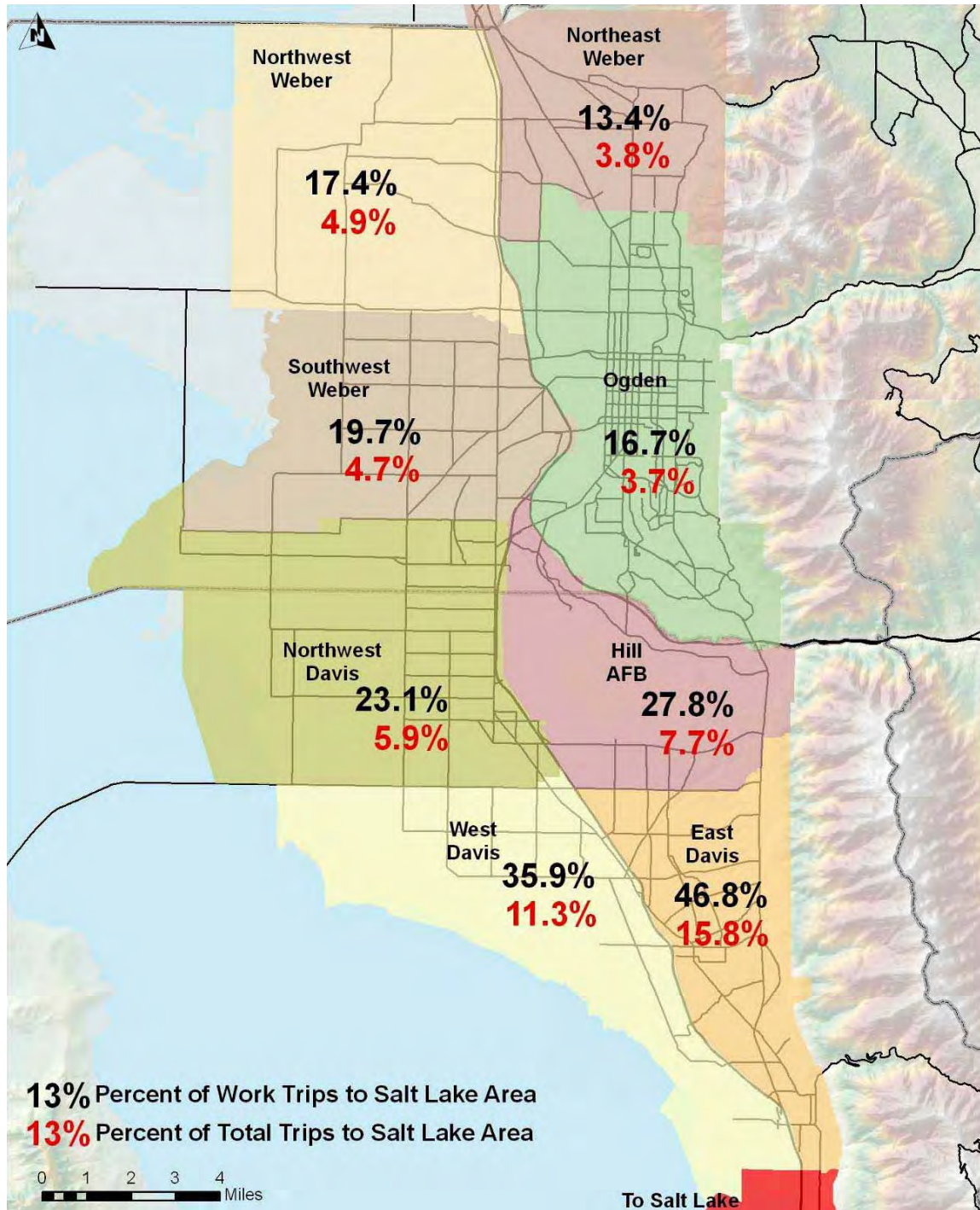
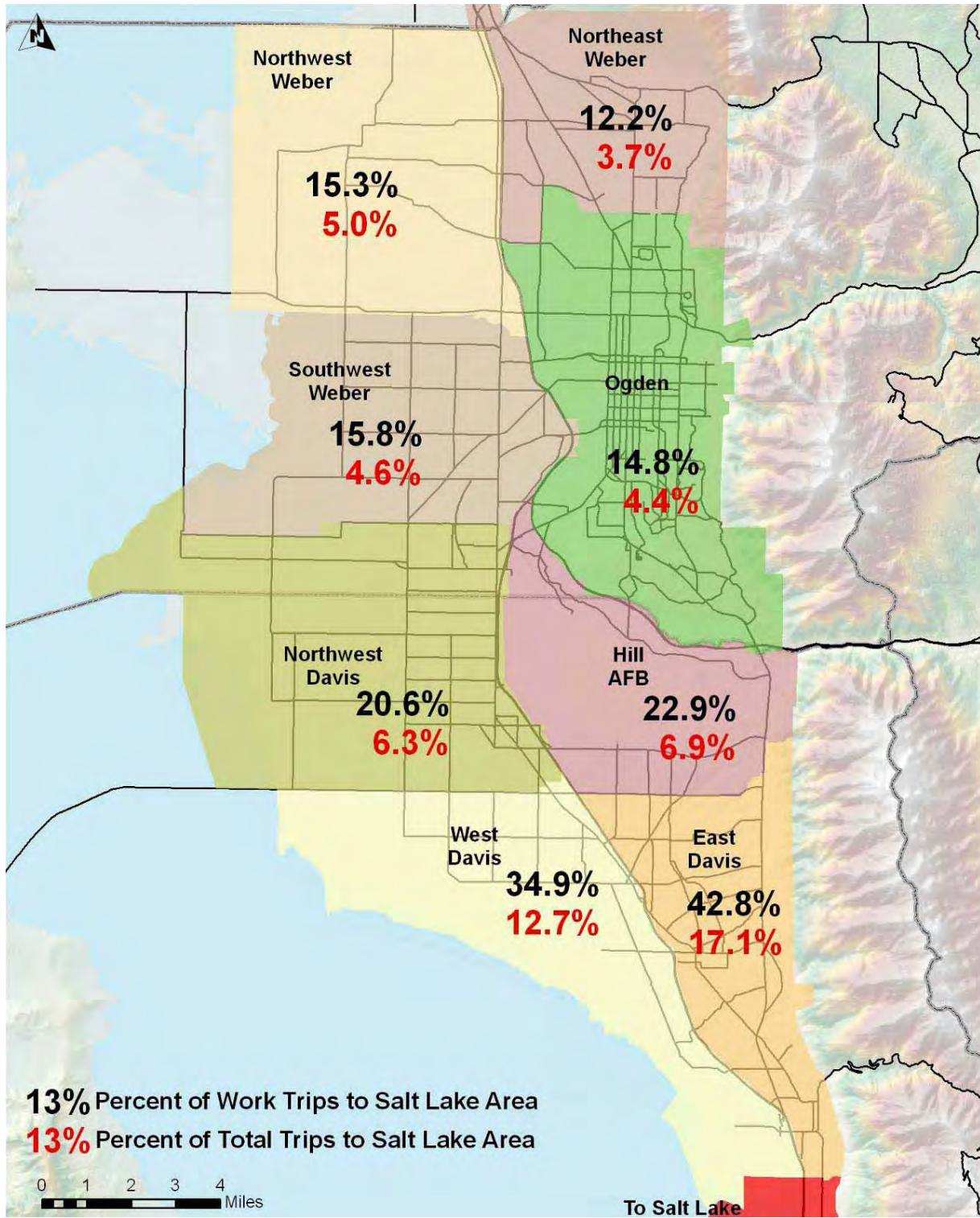


Figure 13: 2040 Percentage of Trips taken to Salt Lake Area



Work Trips

Figures 12 and 13 forecast that in 2040 the percentage of work trips to the Salt Lake area decreases slightly for all travel districts. For example, in 2007 47 percent of the work trips for the East Davis travel district go to Salt Lake, but in 2040 it decreases to 43 percent of work trips. Over time, more jobs are anticipated to become available in the Study Area so that individuals are able to work closer to where they live. Not surprisingly, the draw to Salt Lake is greatest, both today and in the future, for those districts closest to Salt Lake.



Vehicles making the trip south on I-15 in Davis County (July 2008).

Congestion Measurements

One of the first steps in analyzing future deficiencies was to determine whether or not future transportation problems should be expected based on available information. Care was taken in choosing the measures used so that they would be an effective means of relaying relatively technical information to a wide range of audiences. For example, the performance measures should be able to be graphically represented so that they would be quickly and easily understood and compared.

The measurement tools used by the Consultant Team include:

- Travel Time Index (TTI) – refers to a measure of congestion determined by dividing the time it takes to travel a given road segment at the peak hour, by the free-flow travel time for that segment. A TTI of 1.00 indicates that there is no difference in travel time on a given road during the peak hour or during free-flow travel time. A TTI greater than 1.00 is representative of peak hour trips taking longer than non-congested travel.

- Level of Service (LOS) – standard measurement used to identify the amount of congestion on a given roadway. Level of service is given grades of A through F, with A being free-flow conditions and F being highly congested, “parking lot” conditions. A surrogate for detailed LOS analysis is a Volume to Capacity ratio (V/C). A V/C of less than 0.75 equates to LOS C while V/C ratios between 0.76 and 1.0 are approximately LOS D.
- Vehicle Hours of Travel (VHT) – a calculation of the total time all vehicles spend on the transportation network in an average day. This measure is obtained from the regional travel demand model and helps to identify area-wide congestion changes.

Travel Time Index (TTI)

Using the TTI, two future transportation network scenarios can be compared to the 2007 existing conditions. As indicated in Figure 14, the 2007 TTI for the Study Area is 1.19. This means that a trip made during free flow conditions that takes 15 minutes will be an 18 minute trip during peak travel times. Under a “committed” scenario, in 2040, representing construction of projects with committed funding; the TTI will increase to 2.34. This means that a 15 minute trip during free flow time will take approximately 35 minutes during a peak travel time. A committed project is one that is a capacity improvement project and is part of the 2008 - 2013 Transportation Improvement Program (TIP), or 2008 - 2013 Statewide Transportation Improvement Program (STIP). Committed projects also include other projects currently under construction such as the widening of I-15 in Davis and Weber Counties and the FrontRunner commuter rail project. Under the Wasatch Front RTP, assuming that all projects are completed, the 2040 TTI is 1.49. This forecasts the same 15 minute free flow condition trip would require 22 minutes during peak times.

In order to generate Figure 15, the Study Area was divided into four areas: West Weber, East Weber, West Davis and East Davis. Figure 15 shows the TTI on the 2007 transportation network compared to the 2040 socio-economic data with the committed versus Wasatch Front RTP transportation networks. Completing only the committed projects significantly increases the TTI; completing all the Wasatch Front RTP projects is better than the committed projects, but the TTI still worsens compared to today’s transportation network.

Figure 14: 2007 Existing, 2040 Committed, and 2040 Wasatch Front RTP Travel Time Index (TTI) for Study Area

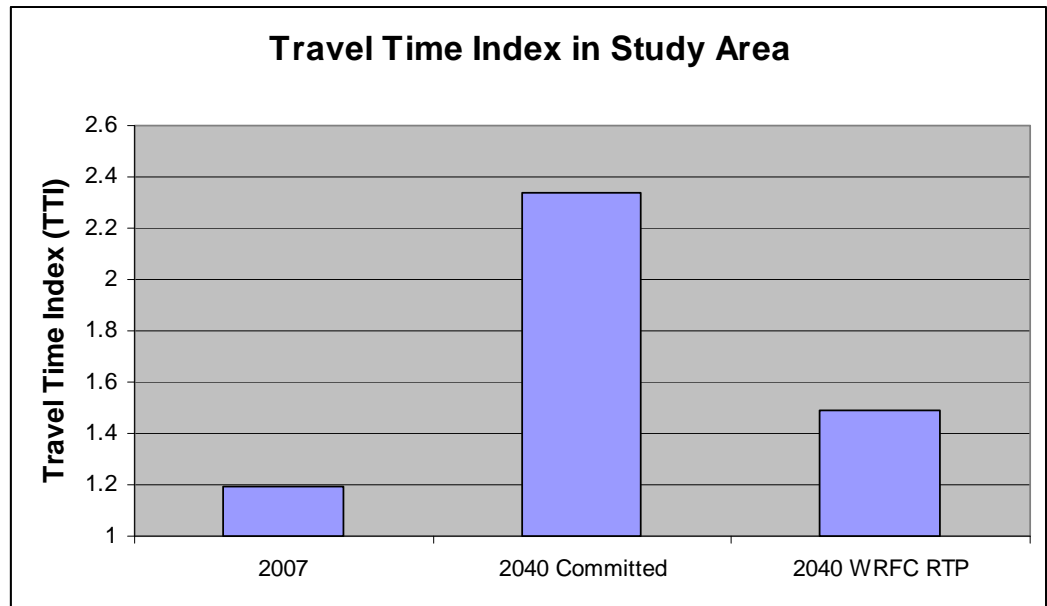
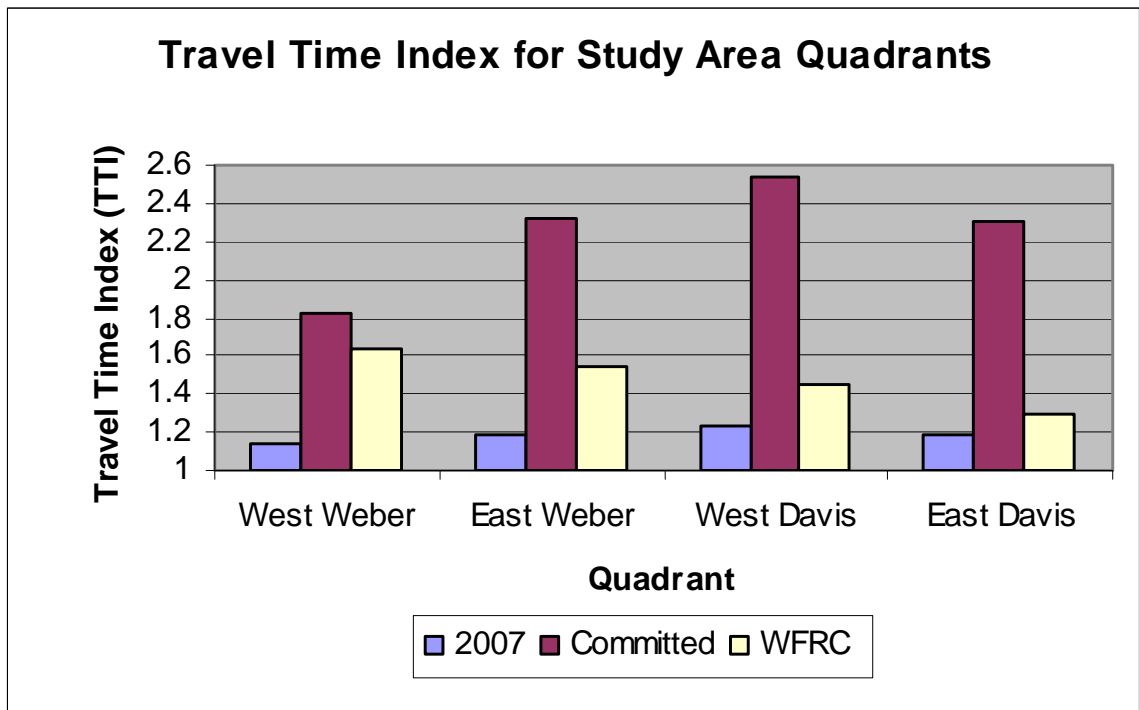


Figure 15: 2007 Existing, 2040 Committed, and 2040 Wasatch Front RTP Travel Time Index (TTI) for Study Area by Quadrant



Level of Service (LOS)

One way to anticipate problems is to look at the level of service. Level of Service (LOS) is a measure of traffic congestion. Specifically, it is a traffic engineering term often used to measure and describe the amount of travel delay on a roadway network and/or at an intersection. Since traffic and overall travel are usually most congested during the morning and afternoon peak travel periods, it is advantageous to try to relieve congestion for these periods. Lessening congestion in peak periods would solve almost all travel problems for most conditions throughout the day. Typically, LOS C or D service flow rates are used in analysis in order to ensure acceptable traffic operations. LOS C and D are targeted because designing for a better LOS may require too much right-of-way and too many expenses for little benefit, while a worse LOS would increase congestion in more than just the peak periods.

Table 4 illustrates the LOS definitions for suburban arterials as defined by the Transportation Research Board in the Highway Capacity Manual (HCM) 2000. Figure 16 is a visual representation of the different levels of service

Table 4: Undivided Multilane Suburban Highway/Arterial Level of Service

Level of Service (LOS)	Traffic Conditions
A	Free-flow operations at average travel speeds, vehicles are unimpeded in maneuvering within traffic stream
B	Relatively unimpeded at average travel speeds, only slightly restricted maneuvering within traffic stream
C	Relatively stable traffic operations, more restricted maneuvering at mid-block locations than LOS B, individual cycle failures at traffic signals may begin to appear
D	Small increases in traffic flow may cause substantial delay and decrease in travel speed, congestion and individual cycle failures at traffic signals are more noticeable as vehicles stop
E	Poor travel speeds with slow progression and high delay, individual cycle failures at traffic signals occur frequently
F	Extremely slow travel speeds with queues forming behind breakdowns, brief periods of movement are followed by stoppages, considered unacceptable by most drivers

(Source: Highway Capacity Manual (HCM) 2000, Transportation Research Board National Research Council, Washington D.C., 2000.)

The LOS in the Study Area was evaluated through travel demand modeling. Traffic flows were forecasted on the current transportation system for existing conditions in the year 2007. Figure 17 shows the LOS for existing conditions in year 2007.

Results of travel modeling are expressed in volume to capacity ratios, a surrogate for the more detailed LOS analysis. Actual LOS calculations would require extensive data collection and detailed information related to intersection geometry. The travel model uses average conditions which are not sensitive to each individual intersection but are generalized to the type of road. Travel model forecasts of LOS using volume to capacity

ratios are typically acceptable for master planning since they allow streets to be properly sized but continues to put the burden on individual developments to perform traffic studies which analyze the more micro conditions. Volume to capacity ratios above 1.00 would result in peak period congestion possibly worse than LOS D. A ratio greater than 1.00 could result in signal failure and extended periods of congestion on the roadway.

Figure 16: Illustration of Levels of Service



Level of Service A



Level of Service B



Level of Service C



Level of Service D

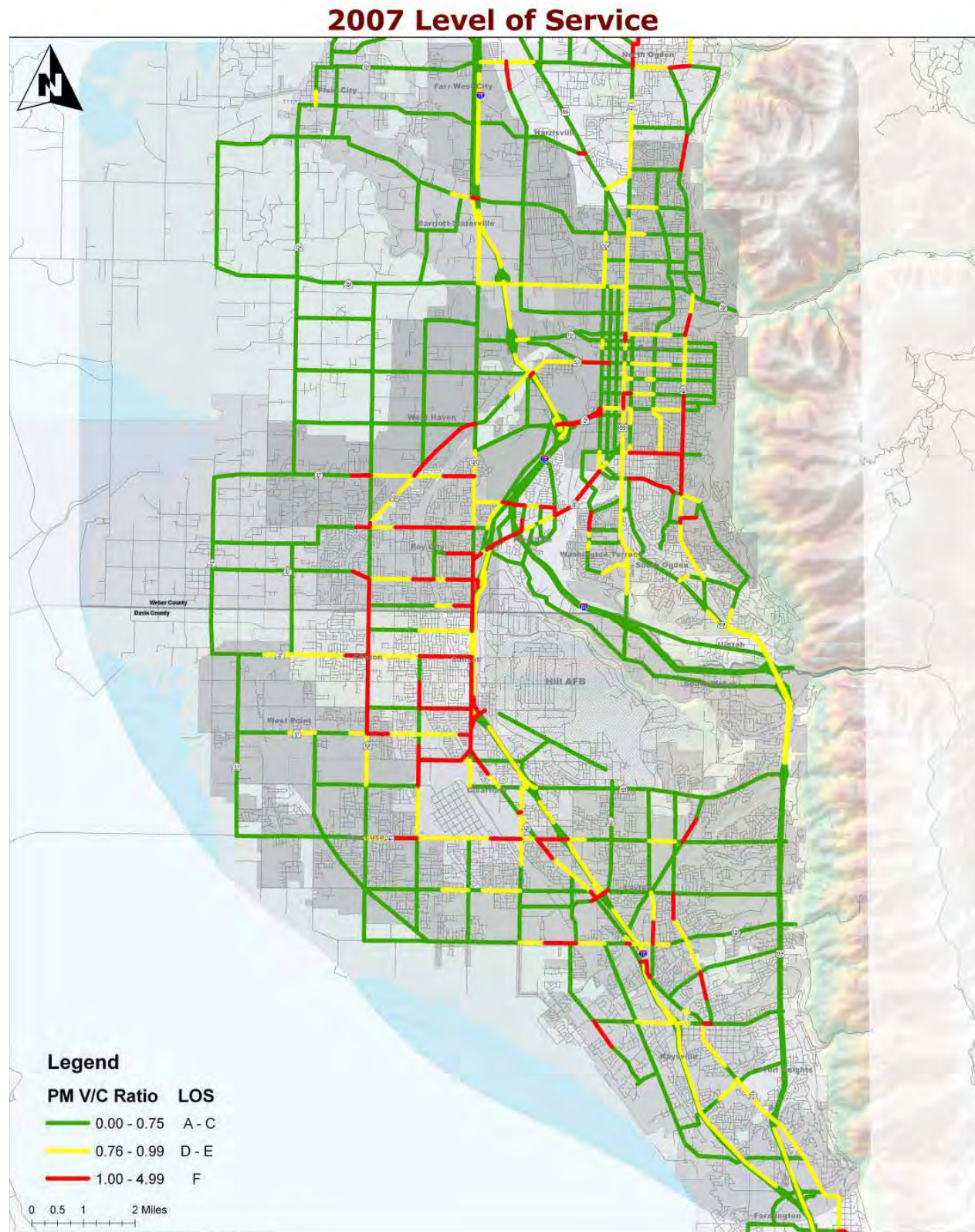


Level of Service E



Level of Service F

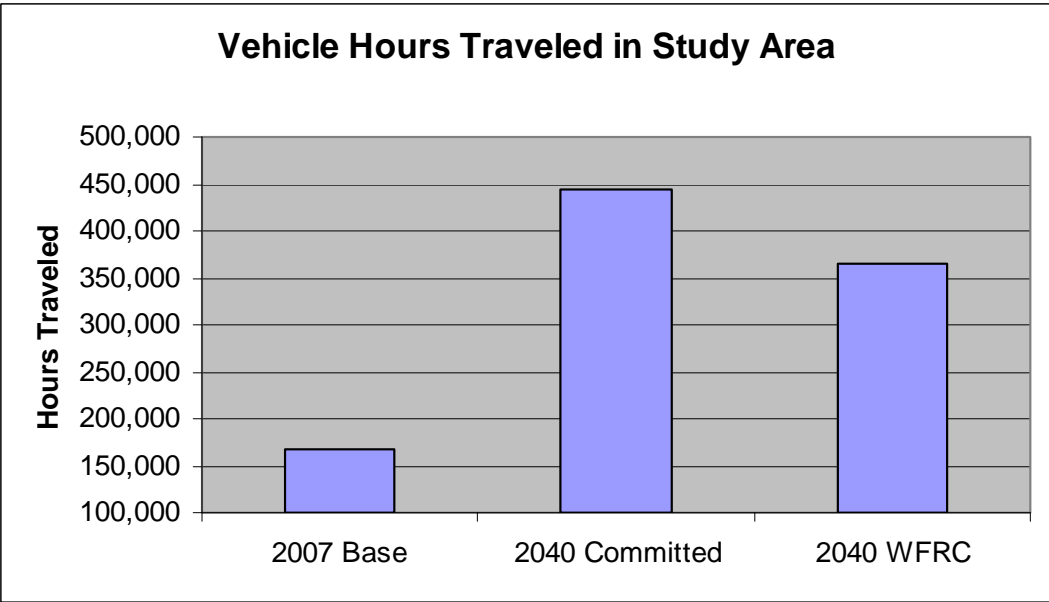
Figure 17: Roadway Level of Service, PM Peak



Vehicle Hours Traveled (VHT)

In 2007, the travel demand model calculated daily total vehicle hours expended traveling on the roadway network in the Study Area was 168,000 hours. Assuming the completion of committed projects, the total number of vehicle hours increases to 443,000 hours in 2040. When modeling the 2040 WFRC scenario, which assumes all projects in the Wasatch Front RTP are completed, VHT is 364,000 hours. As a result of the population increase between 2007 and planning year 2040, there is an increase in the number of vehicles on the roadway. The increased automobile traffic, which is measured by vehicle hours traveled, reflects in part increased congestion.

Figure 18: Vehicle Hours Traveled (VHT) for Study Area 2007 Existing, 2040 Committed, 2040 Wasatch Front RTP



Summary

Now that a baseline of socio-economic information and travel measurement tools have been established for the Study Area for 2007 and for planning year 2040, the next step taken by the Consultant Team was to develop and evaluate transportation network alternatives.